Overview

- On-scene evidence collected
- Testing results
  - Concrete
  - Steel PT rods and reinforcement bars
  - Post-tensioning hydraulic equipment
- Surface roughness examination
North end mostly intact, rotated 90 degrees downward.
Large On-Scene Evidence Collected

- Canopy blister 10/11
- Member 11
- Member 12
- Deck at node 11/12
Evidence from Node 11/12 in Deck
Concrete and Equipment Evidence Collected

Source: Florida Highway Patrol
Steel PT Rods and Reinforcement Bars
Evidence Collected
TFHRC Materials Testing Results

• Concrete
  - Tested compression strength
  - Examined internal structure
  - Evaluated tensile behavior

• Steel PT rods and reinforcement bars
  - Tested yield and tensile strength, percent elongation
  - Analyzed chemical composition of PT rods

• All material specimens were within specifications
TFHRC Equipment Testing Results

• Position of internal components suggests equipment was performing a tensioning operation at time of collapse

• *Post-tensioning equipment was operating normally at time of collapse*
Postcollapse Surface Roughness Examination

- Roughened cold joints enhance performance
- AASHTO LRFD specifies roughened concrete to have 0.25-inch amplitude
  - FDOT does not specify a minimum amplitude
Surface Roughness Direct Measurement

- NTSB developed technique using data analysis of laser scans
- Calculations show cold joint not intentionally roughened

Had cold joint been roughened, bridge could still have failed
Summary

• Evidence testing results
  - Concrete, steel PT rods, and reinforcement bars were within specifications
  - Post-tensioning equipment was operating normally

• Surface roughness examination
  - Cold joint at node 11/12 not intentionally roughened
  - Even if cold joint had been roughened, bridge could still have failed